

AIR EMISSION SOURCE CONSTRUCTION PERMIT

Source ID No.: 0550137

Effective Date: **DRAFT**

Source Name: Kansas Municipal Energy Agency - Jameson Energy Center

NAICS Code: 221112, Electric Power Generation, Fossil Fuel

SIC Code: 4911, Electric Services

Source Location: 325 S. Jennie Barker Road
Garden City, KS 67846

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This permit is issued pursuant to K.S.A. 65-3008 as amended.

I. Description of Activity Subject to Air Pollution Control Regulations

The Kansas Municipal Energy Agency (KMEA) is proposing to construct and operate a new peaking electrical generation site named the Jameson Energy Center (JEC) in Garden City, Finney County, Kansas.

KMEA is proposing to install five (5) natural gas combustion turbine generators (turbines), each with a maximum design heat input rate of 132.1 MMBtu per hour and power generation of 12.9 MWe, and one (1) black start diesel engine with a maximum horsepower rating of 1,474 bhp in the proposed facility. The engine is equipped with one (1) 1,000 gallon capacity diesel storage tank which is attached at the base of the engine.

KDHE reviewed the air quality requirements for the proposed activity. Potential emissions of oxides of nitrogen (NO_x), carbon monoxide (CO), carbon dioxide equivalent (CO_{2e}), particulate matter (PM), particulate matter less than or equal to 10 micrometers in diameter (PM₁₀), volatile organic compounds (VOCs), sulfur dioxide (SO₂), and hazardous air pollutants (HAPs) were evaluated as part of the review process.

The proposed activity is subject to the provisions of K.A.R. 28-19-300 (Construction permits and approvals; applicability) because the potential-to-emit (PTE) of NO_x exceeds the permitting threshold of 40 tons per year and the PTE of VOCs exceeds the permitting threshold of 40 tons per year.

K.A.R. 28-19 350, Prevention of Significant Deterioration (PSD) of Air Quality which adopts by reference 40 CFR Part 52.21 applies to the construction of major stationary sources in which at least one regulated pollutant is emitted in excess of the PSD significant emission levels.

Due to potential emissions for GHG above 100,000 tons per year and potential emissions for NO_x above 250 tons per year, the JEC has opted to take Federally Enforceable limits which will restrict use of natural gas fuel in the turbines to 1,530 MMscf per year, and will restrict operation of the diesel black start engine to 500 hours per year. The JEC will be limited to below the PSD significance threshold for GHG to less than 100,000 tons per year of CO_{2e} by tracking natural gas usage in the turbines and hours of operation of the black start engine on a consecutive 12 month rolling average. These imposed Federally Enforceable Limits will limit GHG and NO_x emissions to below the PSD significance thresholds. The Federally Enforceable Limits will also limit NO_x and VOC emissions to below the Class I Major Source threshold of 100 tons per year.

The JEC is required to apply for a Class II Operating Permit within one (1) year of the initial startup of the proposed facility in accordance with K.A.R. 28-19-500(b)(1).

II. Significant Applicable Air Pollution Control Regulations

The completed construction activity is subject to Kansas Administrative Regulations relating to air pollution control. The following air quality regulations were determined to be applicable to this source:

- A. K.A.R. 28-19-275, Special provisions; acid rain deposition, adopting by reference 40 CFR Part 72 Acid Rain Program.
- B. K.A.R. 28-19-300(a)(1), Construction permits and approvals; applicability.
- C. K.A.R. 28-19-301(e), Construction permits and approvals; application and issuance.
- D. K.A.R. 28-19-302(b), Construction permits and approvals; additional provisions; construction permits.
- E. K.A.R. 28-19-650(a)(3), Emissions opacity limits.
- F. K.A.R. 28-19-720, New source performance standards, adopting by reference 40 CFR Part 60 and its appendices.
- G. K.A.R. 28-19-750, Hazardous air pollutants; maximum achievable control technology, adopting

by reference 40 CFR Part 63 and its appendices.

- H. 40 CFR Part 60 Subpart A, General Provisions.
- I. 40 CFR Part 60 Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines.
- J. 40 CFR Part 60 Subpart KKKK, Standards of Performance for Stationary Combustion Turbines.
- K. 40 CFR Part 63 Subpart ZZZZ, National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines.

III. Air Emission Unit Technical Specifications

The following equipment or equivalent is approved:

- A. Five (5) Siemens Model SGT-400 natural gas fired combustion turbine generators (turbines) for power generation, each rated at 132.1 MMBTU per hour maximum design heat input rate, 12.9 MWe power generation, designated as EU-001, EU-002, EU-003, EU-004, and EU-005. The turbines utilize a Dry Low Emissions (DLE) combustion system. **These turbines are subject to the requirements of K.A.R. 28-19-275, adopting by reference 40 CFR Part 72, and K.A.R. 28-19-720, adopting by reference 40 CFR Part 60 Subpart KKKK.**
- B. One (1) Caterpillar, Model No. C15 ATAAC, reciprocating engine, designated as EU-006. The engine is rated a maximum 1,474 bhp. The unit will be used as a black start generator. Fuel for the engine will be diesel fuel with a sulfur content not to exceed 15 ppm (0.0015 percent by weight). The engine is equipped with an attached 1,000 gallon diesel storage tank. **The engine is subject to the requirements of K.A.R. 28-19-720, adopting by reference 40 CFR Part 60 Subpart IIII, and the requirements of K.A.R. 28-19-750, adopting by reference 40 CFR Part 63 Subpart ZZZZ.**

IV. Air Emissions Estimates from the Proposed Activity

Pollutant type	Potential-to-emit (PTE) ¹ (tons per year)	
	Pre-permit	Post-permit
Nitrogen Oxides (NO _x)	261.7	60.2
Carbon Monoxide (CO)	79.7	22.9
Carbon Dioxide Equivalent (CO ₂ e)	345,871	99,841
Sulfur Dioxide (SO ₂)	1.77	0.51

¹ Potential-to-emit (PTE) means the maximum capacity of a stationary source to emit a pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the source to emit a pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is federally enforceable.

Pollutant type	Potential-to-emit (PTE) ¹ (tons per year)	
	Pre-permit	Post-permit
Volatile Organic Compounds (VOCs)	122.2	35.8
Particulate Matter (PM)	19.3	5.62
Particulate Matter (PM ₁₀)	21.58	5.62
Total Hazardous Air Pollutants (Total HAPs)	3.04	0.88

V. Air Emission Limitations

Each emission limitation in this permit applies at all times to the respective emission source subject to that limitation, including startup, shutdown, and malfunction, except as provided in Section X. Notification, E. Malfunction, of this permit. The exceedance of any emission limitation in this permit may constitute a violation of the permit and may be subject to enforcement action.

- A. The following requirements to limit greenhouse gas emissions (as CO₂e) below 100,000 tons per year and NO_x below 250 tons per year apply plant-wide. [K.A.R. 28-19-302(b)]
 1. The owner or operator shall restrict the use of natural gas fuel combusted in the turbines to 1,530 MMscf per year. [K.A.R. 28-19-301(e)]
 2. The owner or operator shall restrict the use of the diesel black start engine to 500 hours per year. [K.A.R. 28-19-301(e)]
- B. The turbines meet the definition of new units in 40 CFR 72.2 because they will commence commercial operation after November 15, 1990 and serve a generator with a nameplate capacity of 25 MWe or less. Per 40 CFR 72.6(a)(3)(i) a new unit is an affected unit, and so the turbines are subject to the requirements of 40 CFR Part 72, Acid Rain Program.
 1. The turbines are new utility units which combust only natural gas and have not previously lost an exemption under 40 CFR 72.7(f)(4), and so they qualify for a new units exemption under 40 CFR 72.7(a). An exemption from the Acid Rain Program is effective on January 1 of the first full calendar year for which the unit meets the requirements as described in 40 CFR 72.7(b)(2). Compliance requirements for periods in which the turbines are exempt include:
 - a. Applicable provisions of 40 CFR 72.2 through 72.6 and 40 CFR 72.10 through 72.13 as required by 40 CFR 72.7(b)(1).
 - b. Applicable requirements under 40 CFR 70 and 71 as described by 40 CFR 72.7(f)(2)(i).
 - c. New units exemption provisions of 40 CFR 72.7(a) as required by 40 CFR 72.7(f)(1)(i).
 - d. Fuel requirements as described in 72.7(a)(3), which are assumed to be met as long

- as natural gas is the only fuel combusted per 40 CFR 72.7(d)(1).
2. Compliance requirements in periods for which the exemption is not in effect include:
 - a. Acid Rain Program Special Provisions as described in 40 CFR 72.7(f)(1)(ii).
 - b. Acid Rain Program affected units requirements as described in 40 CFR 72.7(f)(4).
 - c. Acid Rain permit application requirements as described in 40 CFR 72.7(f)(4)(ii).
- C. The turbines were constructed after February 18, 2005 and have a heat input at peak load equal to or greater than 10 MMBtu per hour, and so are subject to the requirements of 40 CFR Part 60, Subpart KKKK. Compliance requirements include:
1. Emission limits for nitrogen oxides (NO_x) as described in 40 CFR 60.4320(a), 60.4320(b), and Table 1 to 40 CFR Part 60 Subpart KKKK;
 2. Emission limits for sulfur dioxide (SO₂) as described in 40 CFR Part 60.4330(a);
 3. Fuel requirements as described in 40 CFR Part 60.4330(a)(2);
 4. General compliance requirements as described in 40 CFR 60.4333(a);
- D. The black start generator meets the definition of an affected source under 40 CFR 63.6590(c)(1), and is therefore subject to 40 CFR Part 63 Subpart ZZZZ. The black start generator is a compression ignition engine, and so must meet the requirements of 40 CFR Part 63 Subpart ZZZZ by meeting the requirements of 40 CFR Part 60 Subpart IIII. The engine is a 2007 or later model year, non-emergency, compression ignition internal combustion engine with a maximum engine power less than 3,000 hp and a displacement of less than 10 liters per cylinder. Compliance requirements include:
1. Emission standards of 40 CFR 60.4201(a) as required by 40 CFR 60.4204(b);
 2. Operational and maintenance standards as required by 40 CFR 60.4206;
 3. Operational and maintenance standards as required by 40 CFR 60.4211(a)(1)-(2);
 4. Applicable requirements of 40 CFR parts 89, 94 and/or 1068 as described in 40 CFR 60.4211(a)(3);
 5. Engine emission standards certification as required by 40 CFR 60.4211(c);
 6. Installation and configuration specifications as required by 40 CFR 60.4211(c);
 7. Fuel requirements of 40 CFR 80.510(b) as required by 40 CFR 60.4207(b).
- E. Except as provided in K.A.R. 28-19-11, opacity of visible emissions from the turbines and black start engine are limited to 20%. [K.A.R. 28-19-650(a)(3)]

VI. Monitoring Requirements

- A. The following air emission monitoring requirements apply for the plant-wide limit on greenhouse gas emissions (as CO₂e) and NO_x:
1. Pipeline quality natural gas shall be the only fuel combusted in the turbines. [K.A.R. 28-19-301(e)]
 2. The owner or operator shall install a non-resettable fuel meter for natural gas prior to the turbines to measure the amount of natural gas combusted in the turbines each month. [K.A.R. 28-19-301(e)]
 3. The owner or operator shall monitor the amount of natural gas combusted in the turbines using meter readings. [K.A.R. 28-19-301(e)]
 4. The owner or operator shall develop a written or electronic means to document and record the natural gas consumption of the turbines to demonstrate that they are limited to 1,530 MMscf of natural gas in any consecutive 12-month period. [K.A.R. 28-19-301(e)]
 5. The owner or operator shall install a non-resettable hour meter on the black start engine to record the hours it was operated on a monthly basis. [K.A.R. 28-19-301(e)]
 6. The owner or operator shall develop a written or electronic means to document and record the operating hours and date of operation for the black start engine to demonstrate that it is limited to 500 hours of operation in any consecutive 12-month period. [K.A.R. 28-19-301(e)]
 7. Beginning the second month of initial operation and calculated monthly thereafter, the owner or operator shall demonstrate that CO₂e emissions are less than 100,000 tons per year on a consecutive 12 month rolling basis by calculating the CO₂e emissions using the following equation:

$$[129,981.0 (A) + 1,622.7 (B)] / 2000 \leq 99,900 \text{ tons of CO}_2\text{e}$$

Where:

A = million standard cubic feet of natural gas burned in all turbines during each previous 12 month consecutive period;² and

B = hours of operation of the black start engine during each previous 12 month consecutive period.³

2 The numerical constant 129,981.0 is the CO₂e emission factor in pounds per million standard cubic feet of natural gas. It is based on the EPA greenhouse gas global warming potentials found in Table A-1 to Subpart A of 40 CFR Part 98, and incorporates the recently proposed changes as reflected in the construction application.

3 The numerical constant 1,622.7 is the CO₂e emission factor in pounds per hour of operation of the diesel black start engine. It is based on EPA greenhouse gas global warming potentials found in Table A-1 to Subpart A of 40 CFR Part 98, and incorporates the recently proposed changes as reflected in the construction application.

- B. The following air emission monitoring requirements apply to the turbines under the Acid Rain Program:

There are no Acid Rain Program monitoring requirements for new utility units which qualify for a new units exemption.

- C. The following air emission monitoring requirements apply to the turbines under 40 CFR Part 60 Subpart KKKK:

1. Demonstrate NO_x continuous compliance as described in 40 CFR 60.4340(a);
2. Demonstrate SO₂ continuous compliance as described in 40 CFR 60.4365 and 60.4365(a) or 60.4365(b).

- D. The following air emission monitoring requirements apply to the black start engine under 40 CFR Part 60 Subpart IIII:

1. Applicable monitoring requirements specified in 40 CFR 60.4209 and 60.4211, as described in 40 CFR 60.4209.
2. If the engine is equipped with a diesel particulate filter to comply with the emission standards in §60.4204, comply with the monitoring requirements as described in 40 CFR 60.4209(b).

VII. Recordkeeping Requirements

- A. The following air emission recordkeeping requirements apply for the plant-wide limit on greenhouse gas emissions (as CO₂e) and NO_x:

1. The owner or operator shall maintain monthly records of the natural gas combusted in the turbines to demonstrate that no more than 1,530 MMscf is combusted in any consecutive 12-month period. This record shall be maintained in the form of meter readings that will show the total amount of natural gas combusted at the facility. [K.A.R. 28-19-301(e)]
2. The owner or operator shall maintain a record of the operating hours and date of operation for the black start engine to demonstrate that it operates no more than 500 hours in any consecutive 12-month period. [K.A.R. 28-19-301(e)]
3. The owner or operator shall maintain a record of the consecutive 12 month rolling calculation for greenhouse gas emissions (as CO₂e). The record shall be updated monthly no later than the last day of the month following the month to which the record relates. [K.A.R. 28-19-301(e)]
4. The owner or operator shall develop and maintain a record of all startup, shutdown and malfunction activities. The record shall also record all maintenance activities including the nature of all repairs taken to correct malfunction incidents. [K.A.R. 28-19-301(e)]
5. All records shall be maintained onsite for a period of five (5) years from the date of

record. [K.A.R. 28-19-301(e)]

- B. The following air emission recordkeeping requirements apply to the five (5) turbines under the Acid Rain Program:

Retain records for five years demonstrating the requirements of 40 CFR 72.7(a) are met as described in 40 CFR 72.7(f)(3).

- C. The following air emission recordkeeping requirements apply to the five (5) turbines under 40 CFR Part 60 Subpart KKKK:

1. Demonstrate continuous compliance for SO₂ as described in 40 CFR 60.4365(a).
2. Maintain records of the occurrence and duration of any startup, shutdown, or malfunction as required by 40 CFR 60.7(b).
3. Maintain a file of all measurements as required by 40 CFR 60.7(f).

- D. The following air emission recordkeeping requirements apply to the black start engine under 40 CFR Part 60 Subpart IIII:

1. If the engine is equipped with a diesel particulate filter, follow the reporting requirements described in 40 CFR 60.4214(c).
2. Maintain records of the occurrence and duration of any startup, shutdown, or malfunction as required by 40 CFR 60.7(b).
3. Maintain a file of all measurements as required by 40 CFR 60.7(f).

VIII. Reporting Requirements

- A. The following air emission reporting requirements apply for the plant-wide limit on greenhouse gas emissions (as CO₂e) and NO_x:

If, at the end of any calendar quarter, the facility's actual operations exceed 85% of the operational limitations (i.e., if the facility emits more than 84,915 tons of CO₂e for the past four calendar quarters), the owner or operator shall report the actual operations to the department for that period of time. This report shall be submitted to KDHE within 45 days of the last day of the month following the conclusion of the calendar quarter.

[K.A.R. 28-19-301(e)]

- B. The following air emission reporting requirements apply to the turbines for the Acid Rain Program:

There are no reporting requirements for new utility units which qualify for a new units exemption.

- C. The following air emission reporting requirements apply to the turbines under 40 CFR Part 60 Subpart KKKK:
1. Reporting requirements for NO_x performance testing as described in 40 CFR 60.4375(b).
 2. Reporting requirements for SO₂ performance testing as described in 40 CFR 60.4375(a).
 3. Submit all reports required under 40 CFR 60.7(c) by the 30th day following the end of each 6-month period. [40 CFR 60.4395]
- D. The following air emission reporting requirements apply to the black start engine under 40 CFR Part 60 Subpart IIII:

There are no reporting requirements for the black start engine under 40 CFR 60.4214.

IX. Performance Testing

- A. The following air emission performance testing requirements apply for the plant-wide limit on greenhouse gas emissions (CO₂e) and NO_x:

No performance testing is required as part of the federally enforceable operational restriction. [K.A.R. 28-19-302(b)]

- B. The following air emission performance testing requirements apply to the five (5) turbines for the Acid Rain Program:

No performance testing is required for new utility units which qualify for a new units exemption.

- C. The following air emission performance testing requirements apply to the five (5) turbines for NSPS Subpart KKKK:

1. Performance testing for NO_x as described in 40 CFR 60.4400(a) and 60.4400(b). If the NO_x emission result from the performance test is less than or equal to seventy-five (75) percent of the NO_x emission limit, 40 CFR 60.4340(a) allows a reduction in the frequency of performance tests to once every two years.
2. Performance testing for SO₂ as described in 40 CFR 60.4415(a).

- D. The following air emission performance testing requirements apply to the black start engine for NSPS Subpart IIII:

Performance testing is not required for stationary compression ignition internal combustion engines with a displacement of less than 30 liters per cylinder. [40 CFR Part 60, Table 7 to Subpart IIII]

X. Notification

- A. The following notifications are to be submitted in accordance with 40 CFR 60.7(a) for each of the turbines and for the black start generator:
 - 1. the date construction is commenced postmarked no later than thirty (30) days after such date;
 - 2. the actual date of the initial startup, postmarked within fifteen (15) days after that date; and
 - 3. the date maximum production rate is achieved.
- B. Notify KDHE of the schedule for the performance tests and submit a testing protocol at least 60 days before a performance test is scheduled to begin.
- C. Notify the Air Program Field Staff at the Southwest District Office in Dodge City, Kansas at (620) 356-1075 within 30 days after installation is complete so that an evaluation may be conducted to verify compliance with applicable regulations.
- D. Notify KDHE in writing no later than December 31 of the first year for which each turbine is to be exempt from the Acid Rain Program, as described in 40 CFR 72.7(b)(2).
- E. Malfunction: The owner or operator must notify KDHE by telephone, facsimile, or electronic mail transmission within two (2) working days following the discovery of any failure of air pollution control equipment, process equipment, or of the failure of any process to operate in a normal manner which results in an increase in emission above the allowable emission limit stated in section "V. Air Emission Limitations" of this permit, a written notification shall be submitted within ten (10) days of the event.

The written notification shall include a description of the malfunctioning equipment or abnormal operation, the date of the initial malfunction, the period of time over which emissions were increased due to the failure, the cause of the failure, the estimated resultant emissions in excess of those allowed in "Air Emission Limitations," and the methods utilized to mitigate emissions and restore normal operations. Compliance with this malfunction notification shall not automatically absolve the owner or operator of liability for the excess emissions resulting from such event.

The following criteria will be used by KDHE to evaluate whether emissions from a malfunction are excluded in determining compliance with the emission rate contained herein:

- 1. The excess emission were caused by a sudden, unavoidable breakdown of technology, beyond the control of the owner or operator;
- 2. The excess emissions did not stem from any activity or event that could have been foreseen and avoided, or planned for, and could not have been avoided by better operation and maintenance practices;

3. To the maximum extent practicable, the air pollution control equipment or processes were maintained and operated in a manner consistent with good practices for minimizing emissions;
4. Repairs were made in an expeditious fashion when the operator knew or should have known that applicable emission limitations were being exceeded. Off-shift labor and overtime must have been utilized, to the extent practicable, to ensure that such repairs were made as expeditiously as practicable.
5. The amount and duration of the excess emissions (including any bypass) were minimized to the maximum extent practicable during periods of such emissions;
6. All possible steps were taken to minimize the impact of the excess emissions on ambient air quality;
7. All emission monitoring systems were kept in operation if at all possible;
8. The owner or operator's actions in response to the excess emissions were documented by properly signed, contemporaneous operating logs, or other relevant evidence;
9. The excess emissions were not part of a recurring pattern indicative of inadequate design, operation, or maintenance; and
10. The owner or operator properly and promptly notified the appropriate regulatory authority.

XI. General Provisions

- A. This document shall become void if the construction or modification has not commenced within 18 months of the effective date, or if the construction or modification is interrupted for a period of 18 months or longer. [K.A.R. 28-19-301(c)]
- B. A construction permit or approval must be issued by KDHE prior to commencing any construction or modification of equipment or processes which results in an increase of potential-to-emit equal to or greater than the thresholds specified by K.A.R. 28-19-300.
- C. Upon presentation of credentials and other documents as may be required by law, representatives of KDHE (including authorized contractors of KDHE) shall be allowed to:
 1. enter upon the premises where a regulated facility or activity is located or conducted or where records must be kept under conditions of this document;
 2. have access to and copy, at reasonable times, any records that must be kept under conditions of this document;
 3. inspect at reasonable times, any facilities, equipment (including monitoring and control equipment) practices or operations regulated or required under this document; and

4. sample or monitor, at reasonable times, for the purposes of assuring compliance with this document or as otherwise authorized by the Secretary of KDHE, any substances or parameters at any location. [K.A.R. 28-19-301(e)]
- D. The emission unit or stationary source which is the subject of this document shall be operated in compliance with all applicable requirements of the Kansas Air Quality Act and the federal Clean Air Act. [K.A.R. 28-19-301(e)]
- E. This document is subject to periodic review and amendment as deemed necessary to fulfill the intent and purpose of the Kansas Air Quality Statutes and Regulations and rules promulgated in accordance therewith. [K.A.R. 28-19-301(e)]
- F. This document does not relieve the facility of the obligation to obtain any approvals, permits, licenses or documents of sanction which may be required by other federal, state or local government agencies. [K.A.R. 28-19-301(e)]

Permit Writer

Ann L. Spitz
Environmental Scientist
Air Permitting Section

Date Signed

ALS:
c: SWDO
C-10933